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## REVIEWS

*Dynamic Symmetry: the Greek Vase.* By Jay Hambidge. New Haven and New York: Yale University Press (1920). Pp. 161. \$6.00.

For some years Mr. Jay Hambidge has supplemented his strictly artistic work with a mathematical study of the construction of Greek artistic products. He has presented his theories, from time to time, in various series of public lectures; he has illustrated his principles before schools of design and has expounded them to select disciples. Moreover he edits and writes a periodical, called *The Diagonal*, in which the principles of the theory are developed and applied.

The present volume is the outgrowth of lectures delivered at Yale University on the Trowbridge Foundation, and is the first work published by the Trowbridge Memorial Publication Fund. Mr. Hambidge begins his study with a brief statement of the difference between dynamic (or active) and static (or passive) symmetry. Static symmetry, to which a short final chapter is devoted, consists of the recurrence in design of a single element, such as the square or the equilateral triangle, and is found commonly in Saracenic, Byzantine, Norman, and Gothic art. Dynamic symmetry, which was known only to the Egyptians and to the Greeks, is the principle of the establishment of the "relationship of areas in design-composition".

Mr. Hambidge's thesis, then, is that the principle of Greek design rests on this interrelationship of areas, even though the lines concerned may be, and commonly are, incommensurable. The mathematical elements are set forth in the first three chapters of the book, and are interpreted by the analysis of rectangles. The simplest illustration is found in the case of a rectangle where the square constructed on the end is exactly one-half, in area, of the square constructed on the side. The relationship between these end and side lines of the rectangle, however, is numerically represented by 1 and  $1.4142+$ , which is the square root of two. Thus it is seen that the relationship in line is incommensurable, while, expressed in area, it is perfectly commensurable. A similar proportionate relationship occurs in connection with rectangles where the area of the square constructed on the side is three times, four times, five times, etc., the area of the square on the end, and such rectangles are called respectively root three, root four, root five, etc., rectangles. The numerical relation between the end and the side of a root five rectangle is expressed by 1 and  $2.236$ , which is the square root of five. Closely related to the root five rectangle is a rectangle, the relationship of whose end and side is as 1 to  $1.618$ . This is the proportionate relationship between the figures of a summation series, and is the normal law for leaf distribution on plants. A rectangle constructed on these proportions possesses extraordinary symmetrical qualities, and is called by Mr. Hambidge the rectangle of the whirling squares. The square root of five,  $2.236$ , is  $1.618+.618$ , that is, the root

five rectangle equals, in area, a whirling square rectangle plus its reciprocal. The root five rectangle is regarded as the base of dynamic symmetry.

These are all simple, well-known, mathematical principles. Mr. Hambidge's achievement is the application of these principles to the analysis and interpretation of Greek design. The present work is concerned only with one class of products, vases, and the subsequent chapters are devoted to diagrammatical analysis of many examples in various museums. Almost all the measurements were made or checked by officers at these several museums, so that the possibility of mechanical error is minimized. The results are, indeed, amazing. An ordinary Greek vase of usual graceful shape is found to be constructed on an elaborate system of interrelated squares and rectangles with their reciprocals, and diagonals with their perpendiculars, etc., all with a degree of accuracy that is rather appalling to common human nature with its obtrusive frailties. The apprentices and slaves of Greek potters with uniform skill seem to have followed impeccable models, without variation from exactitude by so much as a jot or a tittle.

Mr. Hambidge is applying these same mathematical principles more widely in the study of Greek design and for the past year has been making, in Greece itself, an analysis of the construction of the Greek temple. The development of his results will be awaited with great interest. In the meantime the elements here enunciated are being taught in various schools of design, and are being practiced with most pleasing success in the workshops of some modern commercial studios. It will be an inestimable boon to modern design if the proportion and symmetry, so characteristic in common Greek products, can be again freely produced. Mr. Hambidge has done a great service in pointing out the means to this end. He has also been instrumental in attracting the interest of wider circles than usual to the perfection of Greek design. The student of Greek archaeology will peruse with great care the principles stated and the analyses explained, and, moreover, as mathematics is an exact science, each student can test for himself, to his own complete satisfaction, the applicability of the principles of dynamic symmetry to any particular case with which he may be concerned.

COLUMBIA UNIVERSITY

T. LESLIE SHEAR

Titus Pomponius Atticus: Chapters of a Biography. A Dissertation Presented to the Faculty of Bryn Mawr College. By Alice Hill Byrne. Bryn Mawr, Pennsylvania (1920). Pp. viii + 103.

The brief biography of Atticus by Nepos is careless in its handling of fact, deficient in psychological penetration, and characterized by sweeping generalizations which cannot be taken literally. Nevertheless, it has the value of a work by a contemporary of Atticus and contains passages that seem to echo conversations of its author with Atticus. The chief

source for Atticus's life is, of course, the Letters of Cicero. When all allowances are made, "the letters remain one of the most sincere and frank of extant human documents" (vii). It is a "fair inference" that, in the speeches assigned to Atticus in Cicero's dialogues, the author would not make Atticus express opinions and ideas at variance with those he actually held. Of the modern authorities Drumann's chapter (*Geschichte Roms*, 5.5-87; revised by Groebe) is erudite, "invaluable as an index but of small value as an interpretation" (vii). Ungherini and Boissier have been influenced too much by Drumann. The biography of Atticus by Peter, in his *Historicorum Romanorum Reliquiae*, the monographs of Münzer on the literary works of Atticus, the studies of Cicero by Strachan-Davidson and Sihler, are good. The above are the main conclusions of Dr. Byrne in regard to her material. She acknowledges also a great debt to the edition of Cicero's Letters, by Tyrrell and Purser.

Three chapters follow her Introduction. They deal successively with Atticus as Man of Business (1-22), Atticus as Man of Letters (23-51), and Atticus in Politics (52-102). In the first chapter we find Atticus engaged in financial and business affairs of a size and scope impressive even when measured by modern standards. In the light of a business career like that of Atticus, we realize the shallowness of the view held by certain economists, that 'capitalism' is a purely modern phenomenon. As banker and broker, real estate owner and agent, Atticus appears to have conducted in Rome something in the nature of a modern trust company. He was an agriculturist and stock raiser on his great Epirote estate, a merchant at least in highly trained slaves, and, as is well known, a publisher. In these activities he appears as usual as a "friend of all the world", performing for his friends many exacting commissions apparently without compensation and freely lending vast sums. Cicero, who had a high standard of business honor, assumes in his letters a similar standard in Atticus. Atticus desired for the provinces a good 'business administration' which should safeguard property and protect the creditor class, but at the same time protect the provincials from oppression. He had many investments in the provinces and lent money to the provincial cities.

The chapter on Atticus as Man of Letters brings home the fact that Atticus, if Cicero's inferior in genius, was at least his equal in culture. The extent to which Cicero, while he was writing his works, leaned upon the literary judgment and taste of Atticus is striking in a man so vain as the orator. The education of the two friends appears to have been along the same lines. As a young man Atticus visited Athens and developed there the enthusiasm for Greek art and literature that earned for him his surname. The quotations in Cicero's letters (compare the interesting list on page 30) show that Cicero assumes in Atticus a wide acquaintance with both Greek and Latin poets. In Athens Atticus frequented the

gardens of Epicurus. Epicurus's scientific explanation of the world as well as his philosophy of conduct appealed to a temperament not greatly prone apparently to mysticism or passion. But Cicero "did not classify Atticus with the confessed hedonists that he counted as representative of the school" (35). Atticus was especially interested in politics and history. He deprecated the lack of literary form, of philosophy and of critical method in Latin historiography, and justly preferred the Greek historians. A list of Atticus's literary works is given (40 ff.). The most important of these was the *Annals*, a history of Rome from the founding of the city, in which special attention was paid to chronology and genealogy. Atticus had apparently the cooperation of Varro in this work. Cicero, in the works he published after the appearance of Atticus's book (in the *Brutus* and the *Academica*, for example, as compared with the earlier *De Re Publica* and *De Oratore*), shows an increased interest in history and chronology which can be ascribed only to the influence of the *Annals* (compare 40 ff., and the notes, especially the references to Münzer's article in *Hermes* [1905], 50-100). The *Annals* exerted considerable influence in Atticus's day and in the generations immediately following. Pliny, for instance, quotes Atticus as one of his sources for Books 7 and 33 of his *Natural History*. But the *Annals* had apparently disappeared by the time of Suetonius. In Doctor Byrne's opinion one of the reasons why the work fell into oblivion was that the hopes of Atticus for Roman historiography had been fulfilled. History had taken its place as a literary form, and by the side of the new works a "meager and unadorned work like the *Annals* might easily fail of appreciation" (51).

In the chapter on Atticus in Politics, the author gives in annalistic form a detailed narrative and analysis of Atticus's public activity from 65 to 44 B. C. (inclusive), expressed chiefly through his relations to, and influence on, Cicero. A few facts and general conclusions may be noted. As is well known, Atticus never rose above the equestrian rank and never aspired to public office. He had, however, a keen interest in politics, and definite political ideals, and looked to Cicero to express these ideals in action. Cicero, in the *De Legibus* 3.26-27, makes him profess a "life-long dislike for all popular movements". He was identified with the equestrian class, but in no partisan spirit; he was opposed to unscrupulous class legislation in favor of the equites. He believed in sound administration rather than constitutional reform, "in legislation promoting commerce without arousing class antagonism by favoritism" (57). "In his leadership of the *equites*, he doubtless urged a policy of moderate demands, efficient public service, honest gains" (57). He cooperated zealously with Cicero in the latter's attempt to effect a *concordia* between the senatorial and the equestrian classes. It is evident that Cicero, in attempting to rally the Optimates against the Triumvirs in 56, was acting against Atticus's advice. Letters of Cicero (4.6; 8.1) seem to indicate that Atticus was advising

cooperation, even subordination, to the Triumvirs, "but that he still felt that Cicero had a peculiar province in the state" (71). By 51 Atticus, like Cicero, had come definitely to regard Caesar as dangerous, and now advised Cicero to withdraw from his connection with Caesar. Atticus had not at first shared Cicero's enthusiasm for Pompey, but we now find him among Pompey's partisans. When the conflict between Caesar and the Senate began, the character of Atticus's advice to Cicero can be inferred from Cicero's letters of December, 50 B. C. 'I really disapprove of opposing Caesar, but my vote shall go with Pompey' (7.6.2), and, a few days later, 'I vote with Gnaeus Pompey, that is with Titus Pomponius' (7.7.7). Atticus clung to the belief that peace with honor could be made between the Optimates and Caesar, but he never wavered in his view that, should peace prove impossible, it was Cicero's duty finally to leave Italy and take his place by the side of Pompey if the latter 'made a stand somewhere' (9.10.7). In 49 Atticus himself, while in Rome, "accommodated himself to the Caesarian régime" (88), but apparently without servility. He took up Cicero's cause with the Caesarians, but was not in a position directly to ask favors from Caesar. He protested against Cicero's retirement from the Forum after Tullia's death, and urged him at least to write political articles. In 44 Atticus joined the group of those who openly rejoiced at the assassination of Caesar, and did what he could to rally a party around Brutus. He distrusted Octavian and warned Cicero against him. It was apparently Atticus who gave Cicero the signal for the publication of the Second Phillipic—Cicero's definite declaration of war against Antony. For the remainder of the life of Atticus we are dependent mainly upon the biography of Nepos. How, after the part he had played, he escaped in the proscriptions of the Second Triumvirate is, to the present writer at least, something of a mystery. Apparently he had by his manifold services to his contemporaries garnered so rich a harvest of golden opinions that the Triumvirs thought it wise to spare him. Dr. Byrne thus sums up his influence on Cicero (101-102):

The greatest value of his counsel lay in its constant moral stimulus. If he could not advise great action, he could advise great renunciations. Whether he could have steeled himself to recommending martyrdom if he had thought cause and occasion worthy it is not possible to say; he certainly did not want Cicero to suffer martyrdom for the sake of Pompey, nor Brutus at the hands of Antony. But there was in him strength to advise Cicero to put aside proffered advancement for the sake of principle, to insist on work in smaller spheres when he had thus closed to himself the great avenues to prosperity and honors, and through years of such work to supply him with patience, courage and a sense of accomplishment.

In this work the author has effected a synthesis of facts already familiar—always a service in a study so divided among specialists as that of Roman antiquity—and she has contributed many valuable ideas and observations of her own. Her exploitation of the source material seems thorough. Among the modern

authorities cited one misses a few familiar titles (Forssyth's biography of Cicero for instance), but it may be assumed that this is because Dr. Byrne did not regard these works as contributing anything of special value to her study of Atticus.

SMITH COLLEGE,  
NORTHAMPTON, MASSACHUSETTS

WILLIAM D. GRAY

Alt Kreta: Kunst und Kunstgewerbe in Ägaischen Kulturkreise. By Helmuth Th. Bossert. Berlin: Wasmuth (1921). Pp. 66. 272 Illustrations.

This beautiful and elaborately illustrated work has just reached this country and is doubtless destined—on account of its relatively low price no less than of its merits—to enjoy widespread popularity. It should, in particular, be of preeminent service to teachers of courses in Aegean civilization.

The introductory portion presupposes a somewhat detailed knowledge on the part of the reader of the main facts attending the life and activities of the Creto-Mycenaean peoples, and consists of a series of essays on Aegean subjects written in a strikingly brilliant and racy style (one finds it hard to believe that, after all, Herr Bossert is not of Gallic origin!). The author discusses such topics as the relation of Aegean art to Etruscan, Babylonian, Egyptian, and Hittite, Aegean religion as manifested in the artistic remains, Does the oriental or the occidental element predominate in early Crete and the Islands?, What is the position of the female in the Aegean religion and State? Then, after the introduction of a chronological table—which is, however, scarcely up to date in its nomenclature—a section of the book is devoted to the presentation of a valuable list of sources of information regarding Crete and her peoples, derived from Egyptian, Babylonian, and Biblical originals.

The illustrations, which cover more than two hundred consecutive pages, are of uniform style and are uncolored. They comprise the entire field, and include topographical plans, architecture, painting, sculpture in relief and in the round, pottery, sword-blades, gold ornaments, and seals. There appear also some examples of Cretan script, including the Phaistos Disk, and a series of monuments from Egypt which are of Cretan origin or bear strong indications of Cretan influence. The arrangement of this illustrative material is far in advance of that of the ordinary handbook and cannot be too highly commended. A preceding section of the text (though, somewhat curiously, not immediately preceding) furnishes such details as the provenance of each work of art shown, its present location, and, generally, a statement of its original publication.

The book is not altogether free from inconsistencies and small errors, particularly in its references to English publications; notwithstanding, it is undoubtedly the best work of its size on this subject that has yet appeared.

ALLEGHENY COLLEGE, MEADVILLE, PA

A. D. FRASER